

Making Telecoms Work in Asia – from technical innovation to commercial success

2 Day Mobile Broadband Networks Master Class

A Technical and Commercial Course where we show how technology economics works in practice with Global Case Studies that will help people really understand their choices and options

14 - 15 March, 2012, Traders Hotel, Singapore



1 Day LTE WiMAX Discussion Forum (Complimentary VIP passes for C-Level Officers from Operators and Workshop Attendees) 16 March, 2012, Traders Hotel, Singapore

Making Telecoms Workshops

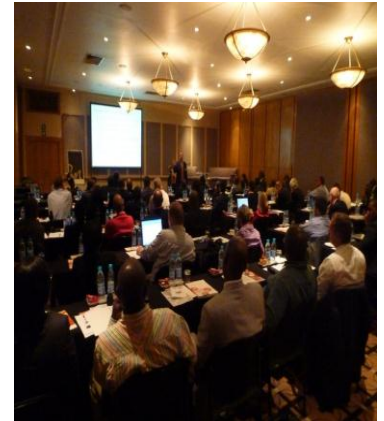
These workshops provide a cost and time efficient way in which telecommunication engineers, product managers and policy makers can access technical information and market and business advice not readily available elsewhere.

The workshops demonstrate how engineering and market and business issues can be practically resolved and how performance gains and cost savings can be achieved.

Session topics cover all physical connectivity media including wireless, cable, copper and fiber.

Our next Asian workshop is being organised with Sun Millennia, our new conference team in Singapore and is a two day workshop for telecommunication managers presently developing and implementing mobile and fixed broadband technology, engineering, market and business plans followed by a one day facilitated discussion forum.

Drawing on research from our new book, **Making Telecoms Work - from technical innovation to commercial success**, [Making Telecoms Work in Asia](#) bridges the traditional divide between engineering and the business planning process.



The two days of workshops are followed by a one day discussion forum and panel session reviewing present and future mobile broadband technology options.

The LTE WiMAX Discussion forum Asia series are part of an extensive market research and collaboration between **Sun Millennia Private Limited** and **RTT Programmes Limited**.

RTT Programmes Limited provide RF engineering and radio technology support to the cellular radio industry, broadcasting, two way radio and satellite industry.

Since 1986, RTT has been specialising in providing an international client base with technology assessment and technology related seminar workshop programmes. The company's knowledge and experience is principally in terrestrial communications, and related technology industries. RTT works closely with members of the Mobile Experts Groups within ETSI (European Telecommunications Standards Institute), the 3GPP1 and 3GPP standards groups and the international academic, scientific and industrial research community

RTT's present research focus centers primarily on the issues of 3G product design and implementation, air interface and network design and the integration of mobile broadband with cable, copper and fiber network technologies.

Sun Millennia Private Limited is a Singapore based business intelligence, research and consulting company with a global mandate on building client business value through our unique integration of seminars and business networking events.

With over 16 years of producing, marketing and selling experience in B2B conference and workshop space, we are well positioned to help you bridge your search for best practices in your domain and add value in your business growth strategies.

We hope you will kindly consider this great opportunity to review and discuss best models for your current and future network.

Thank you!

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2 Day Mobile Broadband Networks Master Class

A **two day** master class for chief technology officers, chief financial officers, chief executive officers or their direct designates involved in developing new telecom products and services for local and global markets.

The master class bridges the divide between technology, engineering, market and business disciplines, bringing together a broad range of practical case studies that show how the process of transition from technical innovation to commercial success can be measured and managed.

The master class is of direct relevance to operators building or planning LTE mobile broadband networks wishing to validate present options for reducing cost and delivering new income streams that can sustain future profitability.

Operators are expected to invest in new spectrum and new infrastructure in order to meet future user expectations of ADSL equivalent dense urban to deep rural connectivity across a wide range of operational conditions. The master class shows how technology and engineering innovation can deliver market and business advantage with improved EBITDA and ROI.

Dates and venue: 14 – 15 March 2012, Traders Hotel, Singapore.

Format

Topics covered:

- Offered traffic forecasts and the related impact on network hardware and radio access network cost and efficiency targets,
- Network equipment hardware cost and value,
- Network equipment software cost and value,
- Site sharing and RAN sharing options,
- Challenges and opportunities of integrating LTE with existing technologies

Deployment CASE STUDY (LATEST):

There are two different deployment scenarios, new spectrum or re farmed existing spectrum – the challenges are different for each but re farming is probably the hardest to sort.

So for example, laying an LTE channel next to a HSPA or GSM channel is particularly challenging – either the HSPA and LTE channels have to be controlled together (and NO ONE knows how that can be done) or other measures have to be taken.

The problem is particularly severe if a 10 or 20 MHz LTE channel is deployed next to a 5 MHz HSPA channel or 200 KHz GSM channel.

'Operators for example considering re farming 1800 MHz spectrum need to have considered all possible coexistence conditions, similarly a new spectrum bid for 800 MHz spectrum will need to have validated all possible spectrally and geographically proximate interference conditions including mobile broadband/terrestrial TV coexistence. **The outcome of the World Radio Congress in January 2012 will mean that these issues are particularly topical and strategically important for the South East Asian operator community.**'

EBITDA and ROI CASE STUDY (Optional):

Operators need to respond to the growth in mobile data demand either by investing in new spectrum and or additional network hardware and/or by improving the efficiency with which existing spectrum is used.

This case study benchmarks different approaches that are being taken by European and US operators and identifies particular opportunities for operators in **South East and North East Asia**. The case studies include RAN (radio access network) sharing experience to date.

We quantify the relative technical and economic efficiency of 'single integrated' networks (the netco model) to existing models where five of more operators deploy parallel networks and explore the related issues of regulatory and competition policy that have to be resolved in order for these techniques to realise maximum fiscal gain.

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Your host and presenter

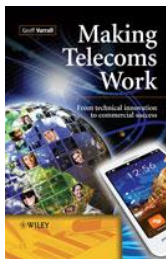


Geoff Varrall

Geoff Varrall graduated from St John's College, Cambridge [MA (Hons) - CANTAB] in 1975, joined Philips Industries as a Product Manager, and over the next 10 years worked in a number of senior Product Management and Market Management positions within Philips, being finally responsible for a £50 million turnover business. In 1985, Geoff Varrall joined RTT as an executive director and shareholder to develop RTT's transnational business as a provider of technology and business services to the wireless industry. He co-developed RTT's original programme portfolio including 'RF Technology', 'Data Over Radio', 'Introduction to Mobile Radio', and 'Private Mobile Radio Systems', the Oxford programme, US Programme and Asia Programme.

Over the past 25 years, over 6000 delegates have attended these programmes. Geoff has presented to audiences throughout Asia Pacific - in Hong Kong, Singapore and Malaysia and has been profiled on Channel News Asia reviewing 3G business opportunities. He is presently working on a range of new RTT products, including cross discipline technology/marketing/business programmes.

A co-author of the *Mobile Radio Servicing Handbook* (Heinemann Butterworth, UK) and *Data Over Radio*, (Quantum Publishing, Mendocino, USA) and *3G Handset and Network Design* (Wiley Publishing, New York), Geoff has just finished his latest book, *Making Telecoms Work – from technical innovation to commercial success* available from January 2012 published by John Wiley. The master class draws on this work but with additional case study material with specific relevance to the South East and North East Asian vendor and operator community.



About Geoff's New Book:

Bridging the industry divide between the technical expertise of engineers and the aims of market and business planners, *Making Telecoms Work* provides a basis for the interdisciplinary analysis of technology, engineering, market and business investment risk and opportunity.

Since mobile broadband has become a dominant deliverable, multiple areas of transition and transformation have occurred; the book places these changes in the context of the political, social and economic dynamics of global telecommunications.

Drawing on 25 years of participative experience in the mobile phone and telecommunications industry, the author closely analyses the materials, components and devices that have had a transformative impact.

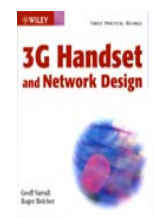
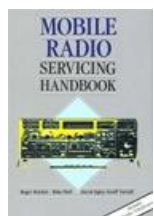
By presenting detailed case studies of materials innovation, such as those shown at success story Apple, the book shows how the collaboration of technological imagination with business knowledge will shape the industry's future.

- Makes a link between the technical aspects and the business practice of the telecoms industry, highlighting the commercial and economic significance of new developments.
- Gives a historical analysis of past successes and failures in order to identify future competitive advantage opportunities.
- Supplies detailed case studies of supply chain disconnects and the impact these have on industry risk and profitability.
- Brings together technological detail with analysis of what is and is not commercially important, from the implications of energy and environmental networks to the technical details of wireless network hardware.

Making Telecoms Work – from technical innovation to commercial success will be available from January 2012.

To pre order a copy follow the link below

<http://eu.wiley.com/WileyCDA/WileyTitle/productCd-1119976413.html>



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2 Day Mobile Broadband Networks Master Class

<p>Timed Agenda 09.00 – 10.30</p>	<p>Day 1 The impact of future growth in Mobile Broadband offered traffic volume</p> <ul style="list-style-type: none"> - Forecasting the growth in Mobile broadband data demand from 2012 to 2017. - Looking at the projected user equipment product mix and form factor changes from 2012 to 2017 and its impact on offered traffic volume forecast and capacity requirements. - Examining the implications of the forecasted growth and capacity requirements for future network density and hardware and software cost targets.
<p>10.30 – 11.00</p>	<p>Coffee</p>
<p>11.00 – 12.30</p>	<p>The impact of future growth in Mobile broadband offered traffic value</p> <ul style="list-style-type: none"> - Current revenues and margin per device. - Revenue forecast based on projected user equipment product mix and form factor until 2012 - Determining the user equipment power and performance constraints and analysing its related impact on the offered traffic value - Examining the implications of the forecasted revenue and performance constraints for future network density and network hardware and software cost targets.
<p>12.30 – 13.30</p>	<p>Lunch</p>
<p>13.30 – 15.00</p>	<p>Mobile broadband traffic characterisation for backhaul network optimisation</p> <p>Examining the various factors that will have impact on the network and backhaul provisioning such as voice and data mix, defining data, present and future mix of best effort, interactive, streamed and conversational traffic, traffic asymmetry assumptions and traffic 'burstiness', case study examples including point to point, point to multipoint and multipoint to multipoint options.</p>
<p>15.00 – 15.30</p>	<p>Tea</p>
<p>15.30 – 17.00</p>	<p>To better meet user expectations cost efficiently</p> <ul style="list-style-type: none"> - How have expectations changed from 2007 to 2012 - How will user expectations continue to change from now to 2017 - Differentiating data rate and data reach expectations. - The interrelationship of link budgets and available bandwidth. - How user equipment performance influences network access economics. - What does these all means for the future mobile broadband network density, related capital and operational cost considerations? <p>Special interest session <u>In this end of day wrap up we address topics of particular interest that have been highlighted by delegates in their pre programme questionnaires.</u></p> <p>Example of previous special interest topics have included terrestrial TV broadcast and mobile broadband integration (MBSFN and LTE TV), satellite and mobile broadband integration, specialist user requirements (public protection and disaster relief) and machine to machine communication.</p>
	<p>End of Day 1 Evening reception for delegates – a chance to relax and discuss the topics covered during the Master Class.</p>

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<p>Timed Agenda 09.00 – 10.30</p>	<p>Day 2 This second day analyses the practical consequences of the changes in offered traffic that have been studied during day 1, including...</p> <p>Setting up the Wireless Radio Access Network Hardware and Infrastructure in a cost effective way</p> <ul style="list-style-type: none"> - Four generations of radio base station evolution - Form factor and functionality of an LTE base station - How to do RF and baseband partitioning - What is the transmit and receive dynamic range - From dense urban to deep rural applications - How the link budget has changed over time - Site sharing and RAN sharing, operational and economic benefits, how radio sites and radio base stations and lower RAN and higher RAN sharing models will need to evolve over time.
<p>10.30 – 11.00</p>	<p>Coffee</p>
<p>11.00 – 12.30</p>	<p>Wireless Core network hardware</p> <ul style="list-style-type: none"> - The need to reduce end to end delivery cost - Microwave link economics, multiplexing gain, point to multipoint - The backhaul mix, The HRAN (higher RAN) and L-RAN (lower RAN) backhaul options with economic comparisons - The impact of data reach and data rate expectations on access and backhaul network topology.
<p>12.30 – 13.30</p>	<p>Lunch</p>
<p>13.30 – 15.00</p>	<p>Network Software</p> <ul style="list-style-type: none"> - Power control and admission control algorithms in LTE networks - How to deliver capacity and coverage gain from LTE-pursuing innovative new approaches - How this impacts operator EBITDA and ROI <p>Note that the LTE air interface is very different from existing air interfaces in terms of the ability of the base station to handle individual users with significantly different symbol level received power. This has a profound impact on how power control and admission control are realised in LTE networks and a profound impact on network access economics.</p>
<p>15.00 – 15.30</p>	<p>Tea</p>
<p>15.30 – 17.00</p>	<p>Copper, cable and fibre network technologies and topologies Benchmarking mobile broadband against other (guided media) delivery options, user expectations including uplink and downlink peak and average throughput, capital and operational costs comparisons.</p> <p>New technology, engineering, market and business models – from trumpets to telecoms The ancient Greeks invented the trumpet as a battlefield communication system .Modern smart phones use mathematical techniques pioneered either in the first or second golden age of Chinese mathematics or the two golden ages of Islamic mathematics. In this second and final day wrap up session we suggest areas where competitive advantage can be achieved through technology and engineering innovation drawing on 2000 years of industry case experience.</p>

Making Telecoms Work in Asia – from technical innovation to commercial success

1 Day LTE WiMAX Discussion Forum

(Complimentary VIP Seats for C-Level Officers from Operators and workshop attendees)

Special Harbor Cruise with Views of Singapore Iconic Central Business District Skyline: By Special Invitation and Workshop Attendees Only

16 March, 2012, Traders Hotel, Singapore

This is a **one day** discussion forum and panel sessions reviewing **present and future** mobile broadband technology options.

In 2010 the mobile broadband global data load was of the order of three exabytes. By 2015 if present growth rates are sustained annual data traffic will have exceeded 150 exabytes.

Revenue growth is however forecast to grow at a substantially slower rate. This represents an unprecedented challenge and opportunity for the global and Asian operator community.

Realizing a return on present and future spectral investment will require a substantially different approach to how we use and make money from mobile broadband radio spectrum.

Capital and operating expenses have to reduce exponentially and income streams have to increase far faster than present trends suggest. The choice of radio interface remains a determining factor in this cost/income trade off. Cost efficiency requires scale. Income is dependent on delivering a user experience that exceeds rather than meets user expectations.

Operator are faced with a complex range of technology options that have to be matched to regionally specific, country specific and operator specific band plans.

This series of panel discussion analyses all present and future options set in the context of adoption experience to date in Europe, the US and Asia.

The objective is to provide an informed framework to help technical and commercial planning teams choose the technologies that deliver real advantage in an increasingly competitive local and global market.

The following key themes will be addressed in depth with Real Examples and Case Studies:

Seminar Format: Four ninety minute sessions:

Each session has a panel discussion followed by sixty minutes of facilitated discussion and debate

- **Technology comparisons (Session 1)**
- **Engineering issues (Session 2)**
- **Market dynamics (Session 3)**
- **Business dynamics (Session 4)**

TIMED AGENDA

08.30 – 09.00 **Registration and Coffee/Tea**

09.00 – 09.05 **Keynote Speech**

09.05 – 10.30 **Technology Comparisons**

Physical layer comparisons, bit per Hz (spectral efficiency) and bit per joule (power efficiency) benchmarks, differentiating peak data rate and average data rate throughput and single user and multi user performance across all cell geometries in all loading conditions – presentation from physical layer specialist.

10.30 – 11.00 **Refreshments**

11.00 – 12.30 **Engineering issues**

Band plan options and the FDD/TDD mix, performance optimisation opportunities, options for achieving cost savings and performance gain – presentation from radio access network optimisation specialist.

12.30 – 13.30 **Lunch**

13.30 – 15.00 **Market dynamics**

Market size and projections, market dynamics, impact of band allocation on scale economics, the impact on transceiver design and cost, software defined radio, Wi Max and the 2.6 GHz extension bands, y, the impact of increased RF integration on volume thresholds, Maturity Performance Thresholds, The RF Functions in a Phone, issues of RF Device Integration and handset RF component cost trends, presentation from market planning specialist.

15.00 – 15.30 **Refreshments**

15.30 – 17.00 **Business dynamics**

An analysis of the industry supply chain, component vendors, OEM and ODM user equipment vendors and infrastructure vendors, how risk ownership is changing over time and the implications this has for technical and commercial decision making –presentation from business planning specialist.

Who will attend?

CTO, CFO, CEO or their direct designates

After 6pm:

Special Harbor Cruise with Views of Singapore Iconic Central Business District Skyline



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2 Day Mobile Broadband Networks Master Class Sales Contract & REGISTRATION FORM

Your Investment (in USD)	Before 13 January 2012 25 % Discount	Before 17 February 2012 10 % Discount	Normal	Places cannot be guaranteed until full payment has been received.
For Operators: 2 Day Mobile Broadband Networks Master Class + 1 Day LTE WiMAX Forum	\$ 2021	\$ 2425	\$ 2695	<p><u>Registration & Enquiry:</u> Daniel Tan Project Consultant</p> <p>Sun Millennium Pte Ltd #02-10D 50 Tagore Lane Singapore 787494 Singapore Direct Office: +65 6456 1539 Fax: +65 6457 0135 Mobile: +65 9450 2005 Email: danieltan@sunmillennia.com</p>
Group Discount for 3 or more people: 15 % Group Discount for 5 or more people: 20 % Only 1 Discount scheme will apply.				Event Code: SM/2012/W/T2/SG
The investment includes: course documentation, lunch, refreshments and 15% service charge. The course fee does not include accommodation or travel costs.				<p>Payment: Bank Transfer – full details of bank transfer options will be given with your invoice on registration</p>
For non-operator, please understand that limited seats are allocated to service providers or vendor category. There will be a fee at USD 3200 which covers networking sessions, lunch, and refreshments. Early Bird at 10% till 31 Jan 2012.				<p>Accommodation: It is recommended to book the hotel rooms early as there are only limited rooms available at discounted corporate rate. Kindly contact the following for reservation:</p>
Delegate Details (PLEASE COMPLETE IN CAPITAL LETTERS)				<p>Ning Zhen Choy, Assistant Sales Manager Traders Hotel, Singapore. +65 6831 4305 +65 6831 4330 E mail: ningzhen.choy@tradershotels.com</p>
Delegate 1				<p>Booking Conditions - Should you be unable to attend a substitute is always welcomed anytime before the event at no additional charge. Alternatively, a credit voucher equivalent to the full amount will be issued for you to attend any Sun Millennium Pte Ltd events for up to 18 months.</p> <p>In the unfortunate event that a course is cancelled, Sun Millennium Pte Ltd is not liable for any costs and damages incurred by participants in connection with the course.</p> <p>SAVE up to 40% and improve performance with our cost-effective tailored in-house courses. Please call +65 6493 6965 or email sales@sunmillennia.com for details.</p> <p>LIMITED SEATS FOR Workshop and Special Harbor Cruise with Views of Singapore Iconic Central Business District Skyline: Please Register Soon!</p> <p>First 5 booking get autographed book, Making Telecoms Work from Geoff worth USD 95!</p>
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